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09/918,532	08/01/2001	Takayuki Yamamoto	Q65685	3507

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EXAMINER

ZALUKAEVA, TATYANA

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/918,532

Applicant(s)

YAMAMOTO ET AL.

Examiner

Tatyana Zalukaeva

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,6,7,11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,7,11,12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 12/02/2004 has been entered.
2. Claims 1 and 6 are currently amended to produce a "uniform mixture"
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The introduction of "molecular weight" in the amendment filed February 4, 2003, instead of previously disclosed "weight average molecular weight" is not supported by original specification before it was amended. The instant specification clearly provides for the weight average molecular weight (see pages 4 and 10 of the instant specification). The instant specification NEVER mentions or provides any guidance for the term

"molecular weight", nor does the instant specification provides the methods of determination of molecular weight. This is a new matter situation.

In addition, the amendment to Specification filed February 4, 2003 **is objected to under 35 U.S.C. 132** because **it introduces new matter into the disclosure**. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material, which is not supported by the original disclosure is as follows: "**molecular weight**" versus "**weight average molecular weight**" as initially presented.

Applicant was required to cancel the new matter in the reply to the Office Action.

5. Claims 1, 2, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The molecular weight limitation of 100,000 or less set forth in claims 1, 2, 6, 7, 11 and 12 fails to identify whether this numerical value represents a ***weight average*** molecular weight or a ***number average*** molecular weight or ***viscosity average*** molecular weight.

Therefore, claims 1, 2, 6, 7, 11 and 12 do not set out and circumscribe a particular area with a reasonable degree of precision and particularity.

It is imperative that the type of molecular weight be identified, since it is well known ***that molecular weight of a particular polymer yield significantly different***

***“number average”, and “weight average” numerical values, see Ex parte Simpson, 61 USPQ2d 1009 (BdPatApp&Int 2001),*** which deals with the issues of indefiniteness of molecular weight recitation, and an opinion based declaration. The headnote reads as follows: Patent examiner's decision to reject applicants' patent claims, directed to blend of linear low density polyethylene and high density polyethylene, for failure to adequately define term “molecular weight” is affirmed, even though applicants submitted declaration of inventor indicating that persons of ordinary skill in art would realize that “weight average molecular weight” was intended, since molecular weight can be measured in several different ways, since Manual of Patent Examining Procedure states that factual testimony is preferred over opinion testimony, since inventor's opinion is not supported by adequate documentation in record, and since applicants, therefore, have failed to establish that examiner erred in declining to accord inventor's testimony controlling weight; examiner's finding that inventor's opinion was “self-serving” relates to inventor's interest in outcome of case, which examiner was entitled to factor into analysis, and such finding should not be read as questioning inventor's good faith.

6. In addition claims 1 is rejected under 35 U.S.C. 112, second paragraph as reciting the limitation “ the joint mixer” that does not have an antecedent basis. The claim and specification provide for “a line mixer”, but do not provide for “the joint mixer”.

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7. Claims 1, 2, 6, 7, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamba et al (U.S. 6,224,938)

Bamba discloses a method for producing **pressure sensitive adhesive**, said method comprising subjecting a mixture of monomers to be polymerized to polymerization in an inert fluid in a supercritical state (abstract). This is readable on the solution comprising a mixture of monomer and carbon dioxide. Examples of monomers to be polymerized include **acrylic acid monomers**, listed in col. 2, lines 46-51 and others listed in col. 2, lines 53-65. Polymerization is performed in the presence of **conventional free radical initiators** (col. 3, lines 5-11). Preferable supercritical fluid is named as **carbon dioxide** in col. 3, line 17. Polymerization temperature is from **20-100°C**. **Continuous process** of polymerization is described in col. 4, lines 35-50.

With regard to the limitation of the instant claim that 10% or less based on the total weight of the total monomers of components having a molecular weight of 100,000 or less it is noted that the limitation 10% or less reads on the total absence of such components. With this in mind, according to the method of Bamba's invention, by ejecting the pressure-sensitive adhesive to a low-pressure region, **the residual monomer and lower molecular weight components**, can **be evaporated off** (col.5, line 2), which means can be completely removed. Therefore, the disclosure of Bamba in col. 4, line 65-67 through 5, lines 1-5 recites the embodiment wherein the low molecular weight component (Mw 100,000 or less) is completely removed.

The disclosure of Bamba differs from the instant claims by

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- 1) by not disclosing that the polymerization apparatus is equipped with a line mixer, and
- 2) by not exemplifying polymerization time for the **continuous** process.

With regard to apparatuses Bamba clearly suggests the continuous process in the extrusion apparatus, wherein the raw materials, such as monomer, initiator and inert fluid (supercritical carbon dioxide) are being pressurized and continuously supplied to the extrusion apparatus (col. 4, lines 35-40). Taking into account the breadth of "in line mixer", it encompasses the extrusion apparatus of Bamba, and the mixing of components in an extrusion apparatus is substantially similar and encompass to mixing the monomer solution and carbon dioxide in the joint mixer as per instant claims.

Furthermore, it is noted here that it is noted that the claimed invention calls for **the process claims**, wherein the steps of the process are met by the applied prior art, and the structural limitations of apparatus do not present manipulative difference between the claimed process steps and the prior art process. Therefore, the recitation of specific structural limitations of apparatus for performing such steps does not serve to limit the claim.

With regard to the difference in the residence time, it is well known in the art that **time** and temperature, for example, are those parameters, which are conventionally adjusted to achieve the optimum of molecular weight (by reducing or increasing chain transfer reactions), polydispersity, residual monomer content. Bamba, for example, provides a motivation to a person skilled in the art take measures to reduce residual

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monomer content, such as ejecting the pressure-sensitive adhesive to a low-pressure region, to evaporate the residual monomer and low molecular weight components, which have a possibility to lower the pressure-sensitive adhesive properties. Bamba further suggests that in his process, the heat drying step can be omitted by properly choosing the parameters of the process (col.4, lines 59-63, 65-67, col.5, lines 1-5)

Therefore, a person skilled in the art would have found it obvious to adjust the reaction time, (which is a result effective parameter, as explained above), depending on the desired balance of polydispersity, weight average or number average molecular weights of resulting polymers, and thus to arrive at the instant claims.

Discovery of optimum value of a result effective variable in known process is within the skills of one with ordinary skill in the art and would have been obvious, ***In re Boesch and Slaney*** 205 USPQ 215 (CCPA 1980).

### ***Response to Arguments***

8. Applicant's arguments filed 12/02/2004 have been fully considered but they are not persuasive.

***The term “molecular weigh of 100,000” has no literal support in the original specification, and thus constitute a new matter.***

Applicants' argument with regard to the rejection under 112, first paragraph on a new matter situation resides in contention that the term “***molecular weight***” has implicit support. Applicants recited pages 8, lines 18-20 wherein allegedly “very less low



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molecular weight components can be obtained" is recited. Needless to say that such phrase is grammatically incorrect, it absolutely does not support the claimed limitation.

However, on pages noted by Applicants (page 6, line 16) NUMERICAL values of 100,000 **do not appear**. Nor such limitations appear on the other pages indicated by Applicants. To the contrary, the referenced pages discussed the reduction of low molecular weight component, wherein the instant specification ***as originally filed*** clearly presented the following: "The proportion of components having an ***Mw of 100,000 (Mw stands for weight average molecular weight-T.Z.)*** or less was 2.99% as measured from the molecular weight distribution curve" (see page 11, lines 1, 2).

Examiner absolutely disagrees with Applicants' position that "...Applicants submit that the fact that the numerical value of 100,000 ***is not recited in the specific passages of the specification referring to low molecular weights components*** is not considered as a determinative factor for whether one of ordinary skill in the art would determine if the term "weight average molecular weight" or "molecular weight" was intended". To the contrary this admission is taken by the Examiner as Applicants' admission that the specific limitation was not supported by the instant specification at the time the Application was filed.

Further in their arguments Applicants state that it does not make any sense for the example to subsequently refer to the specific components thereof as having a weight average molecular weight of 100,000 or less, and that "one skilled in the art would recognize that the components are discussed in terms of their actual molecular

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weight" (see Brief, page 10, first paragraph). It is noted that there is NO such term in the art as actual molecular weight

Applicants further refer to the term "molecular weight" that is allegedly consistent with the use of such term in original specification. This is not found persuasive because as shown above the instant specification provides expressly for "the specific components thereof as having a weight average molecular weight of 100,000 or less" (page 11, lines 1 and 2 of the instant specification). Also, Examples 1, 2 on pages 10, 11, provide for the Mw of 100,000 or less, as well as Example 3, page 11, line 27 provides for Mw of 100,000 or less, and therefore, the limitations that appeared in the instant claims 1 and 2 refers to the **weight average** molecular weight, not to "actual" molecular weight.

Resuming the above, the paragraph of specification as originally filed ***"The acrylic pressure-sensitive adhesive comprises preferably 10% by weight or less, more preferably 6.5% by weight, based on the weight of the total monomers, of components having a weight average molecular weight of 100,000 or less"*** does ***have literal*** support throughout the entire specification, ***while removing the term "weight average"*** in the amendment filed 02/04/2003 introduces new matter in the specification. And the amended claims containing the clause "molecular weight" instead of initially filed "weight average molecular weight" have been properly rejected under 35 U.S.C. 112, first paragraph, as not supported by the original disclosure.

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Applicants state that the amendment was made to correct the "inadvertent, obvious error in certain locations" (see Brief, page 12 beginning of the bottom paragraph). During telephone conversation with Applicants representative, Mr. Scala after the amendment was filed, Mr. Scala noted that the new limitation of "molecular weight" instead of initially recited "weight average molecular weight" is derived from a priority Japanese Application, and that allegedly the error was made during translation. Even if this is the case (**although the certified translation has never been submitted**), there is no mentioning in initial filing that the Japanese Application is incorporated by reference in its entirety in the present Application. Therefore, the new limitation still introduces the new matter. The proscription against the introduction of new matter in a patent application (35 U.S.C. 132 and 251) serves to prevent an applicant from adding information that goes beyond the subject matter originally filed. See *In re Rasmussen*, 650 F.2d 1212, 1214, 211 USPQ 323, 326 (CCPA 1981). Where a foreign priority document under 35 U.S.C. 119 is of record in the U.S. application file, applicant may **not rely on the disclosure of that document to support** correction of an error in the pending U.S. application. **Ex parte Bondiou**, 132 USPQ 356 (Bd. App. 1961). This prohibition applies regardless of the language of the foreign priority documents because a claim for priority is simply a claim for the benefit of an earlier filing date for subject matter that is common to two or more applications, and does not serve to incorporate the content of the priority document in the application in which the claim for priority is made. This prohibition does not apply where the U.S.

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application explicitly incorporates the foreign priority document by reference. See MPEP 2163.06

***The term “molecular weight” is indefinite.***

The crux of Applicants' arguments with regard to rejection under 35 U.S.C. 112, second paragraph, appears to hinge on the number of ***citations, taken out of context***, that recite the term “molecular weight” without referring to the weight average or number average molecular weight. Taken, for example, passage from Grant & Hackh's Chemical Dictionary, the molecular weight of 375 (see Brief, page 13, first paragraph) is a poor example to support the “molecular weight” for ***polymers***. This definition is referred ONLY and solely to low molecular compounds, which is proven by the value of 375. Needless to say that other examples, provided by Appellants, such as methanol (M.W. 32 and ethanol, M.W. 46) (see Brief, page 13, bottom paragraph) just serve to completely support the Examiner's position that the molecular weight of low molecular compound is absolutely different from the molecular weight of polymers.

Appellants' further statements that GPC can be used to measure molecular weight “with respect to entire polymer”, is incorrect. GPC is a solid-liquid elution chromatography that automatically separates solutions of polydisperse polymers into fractions and is used to measure the molecular weight distribution which is a ratio of  $M_w/M_n$ , and from there by measuring either one  $M_w$  or  $M_n$  by specific techniques, the other  $M_w$  or  $M_n$  respectively can be calculated.

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Without referring to each and every citation of issued patents cited by Appellants, that use the term "molecular weight", Examiner would like to emphasize **two factors**:

a) each and everyone of the Patents cited by Applicants recite the NUMERICAL VALUES that are either **weight average or number average molecular weights**, while, for example U.S. 6,444,772 is not relevant at all to the instant situation because it discusses molecular weight for low molecular compounds (M.W. 116-297).

b) In order to support the Examiner's position, as well as the position held by the Courts, the reference pages from George Odian "PRINCIPLES OF POLYMERIZATION" textbook is provided as an appendix to the Examiner's Answer:

Some passages are: "When one speaks of the **molecular weight of polymer, one means something quite different from which applies to small sized compounds**" and further, "...the various methods **DO NOT** yield the same average molecular weight. Different average molecular weights are obtained because the properties being measured are biased differently toward the different sized polymer molecules in a polymer sample", and last, but not least (see page 23) "More than one average molecular weight is required to reasonably characterize a polymer sample. There is no such need for a monodisperse product for which all three average molecular weight are the same ( $M_w$ ,  $M_n$  and  $M_v$ )" All the above clearly supports the Examiner's position that in order to characterize a polymer sample with a NUMERICAL VALUE of molecular weight, one should clearly indicate what type of molecular weight is meant.

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With regard to Applicants' argument that "Ex parte Simpson is an unpublished decision of the Board of Patent Appeals and Interferences and is not a precedential decision.

This means that Ex parte Simpson is not controlling the law", It is noted that the Examiner IS bound by the decisions of BPAI.

All other Applicants argument have been addressed numerous times and such previous discussion is incorporated herein in its entirety.

**It is lastly noted that each and every Applicants' example provide for the value of Mw for the number of less than 10% of polymer having Mw of 100,000.**

**Arguments on the rejection of claims 1, 2, 6, 7 over Bamba. (U.S. 6,224,938).**

There are two basic argument with regard to Bamba reference:

a) according to Applicants, "Bamba does not disclose or suggest the step of uniformly mixing a monomer mixture and an inert fluid and feeding the resultant mixture to a continuous reactor".

This issue is in details discussed in paragraph (10) of the instant communication, i.e. With regard to apparatuses Bamba clearly suggests the continuous process in the extrusion apparatus, wherein the raw materials, such as monomer, initiator and inert fluid (supercritical carbon dioxide) are being continuously pressurized (mixed) and continuously supplied to the extrusion apparatus and continuously ejected from the extruder(col. 4, lines 35-40). This is a continuous process, wherein the step of pressurizing and supplying the mixture of monomers and inert carbon dioxide is read

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on mixing the monomer solution and carbon dioxide in the line mixer as per instant claims. Furthermore, considering the breadth of "line mixer" of the instant claims, it is noted that the extruder is very well encompassed by the "line mixture". It is also noted that the extruder as mixing/polymerizing device is exemplified in Appellants' disclosure as preferred device. (page 7, lines 15, 16)

Furthermore, it is noted here that the claimed invention calls for ***the process claims***, wherein the steps of the process are met by the applied prior art, and the structural limitations of apparatus do not present manipulative difference between the claimed process steps and the prior art process. Therefore, the recitation of specific structural limitations of apparatus for performing such steps does not serve to limit the claim.

b) according to Applicants, in order to recognize prima facie obviousness of optimization of a parameter of the process, such parameter should be recognized as a result effective variable. Examiner agrees with this position, and therefore did provide the statements why the time of reaction (residence time) is a result effective variable (see paragraph 10 of the present communication).

Time and temperature of chemical reactions are known result effective variable (remember for instance Arrhenius equation and/or dependence of conversion of monomers into polymers on residence time) and ***are*** those parameters, which are

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conventionally adjusted to achieve the optimum of molecular weight (by reducing or increasing chain transfer reactions), polydispersity, residual monomer content.

Bamba, for example, motivates a person skilled in the art ***take measures*** to reduce residual monomer content, such as ejecting the pressure-sensitive adhesive to a low-pressure region, to evaporate the residual monomer and low molecular weight components, which have a possibility to lower the pressure-sensitive adhesive properties.

Therefore, a person skilled in the art would have found it obvious to adjust the reaction time, (which is a result effective parameter, as explained above), depending on the desired balance of polydispersity, weight average or number average molecular weights of resulting polymers, and thus to arrive at the instant claims. Discovery of optimum value of a result effective variable in known process is within the skills of one with ordinary skill in the art and would have been obvious, it has been held that a result oriented variable implemented within the skill of the art to solve a known problem in a known process is obvious absent the showing of a new or unexpected result, **In re Boesch and Slaney** 205 USPQ 215 (CCPA 1980).

Next Applicants argument is that Bamba does not disclose pressure sensitive adhesive comprising 10% or less based on the weight of total polymers of components having molecular weight of 100,000 or less.



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In response to this it is noted that employing Examiner's duty to police the claim language by giving it the broadest possible interpretation", (Springs Window Fashions LP v. Novo Industries L.P., 65, USPQ 2d 1826, 1830 (Fed. Cir. 2003), the limitation 10% by weight or less is understood that 0% (none at all) of the polymers have the (?) molecular weight of 100, 000 or less is incorporated in this limitation. In this regard Bamba teaches that according to the inventive process, by ejecting the pressure-sensitive adhesive to a low-pressure region, the **low molecular weight components**, **are evaporated off** simultaneously with the evaporation of the inert fluid (col.5, lines 1-5). Thus the low molecular weight components are virtually not present in this embodiment of the process of Bamba. It is noted that Applicants in their specification name the components "having molecular weight of 1000,000 or less" as low molecular weight components.

With regard to Applicants' arguments that the temperature of the instantly claimed process is not disclosed by Bamba, it is respectfully submitted that each Bamba's Example (1,2,3) and generic teaching of temperature (col.3, line 34) recites the temperature that is a specific data point within the claimed range.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (571) 272-1115. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tatyana Zalukaeva  
Primary Examiner  
Art Unit 1713

February 4, 2005

